

**Targeted inventory of reptile and amphibian species,
Black Canyon of the Gunnison National Park
and Curecanti National Recreation Area**

Final Field Report



Geoffrey A. Hammerson

15 February 2005

Targeted inventory of reptile and amphibian species, Black Canyon of the Gunnison National Park and Curecanti National Recreation Area

Final Field Report

Geoffrey A. Hammerson

15 February 2005

BACKGROUND

In 2000, the USGS-BRD in Moab prepared reptile and amphibian master lists for each Northern Colorado Plateau Network (NCPN) park. These lists contained species that are known to occur or are suspected to occur in the park units based on habitats and range distributions. The USGS investigator used personal knowledge of species distributions as well as established scientific references and existing park species lists to develop these lists. These master lists were updated and revised by the NCPN in March 2004, prior to the initiation of this project.

The goal of this inventory was to document the amphibian and reptile fauna of the Black Canyon of the Gunnison National Park (BLCA) and Curecanti National Recreation Area (CURE), Gunnison and Montrose counties, Colorado. The results were used to update the amphibian and reptile lists for the two parks.

CONDITIONS AND METHODS

Surveys took place on 15 days in June 2004 and 8 days in August 2004 (10 days in CURE and 16 days in BLCA). Some surveys included parts of the Gunnison Gorge National Conservation Area along the Chukar Trail and adjacent Gunnison River, which is the only practical access to the Gunnison River canyon in the extreme western part of BLCA. General survey locations are indicated on the six maps in Appendix 1. Photographs of selected survey habitats are included in Appendix 2.

With a few exceptions, survey days were sunny and mild or warm and suitable for reptile activity. At CURE, nighttime temperatures were relatively cool, sometimes falling into the upper 30s°F in June. In both June and August, nighttime temperatures generally were too cool for nocturnal snake activity, a reflection of the generally high elevations in the survey area. Roads in BLCA and CURE are almost completely at high elevations, and they proved to be unproductive during periodic nighttime searches for snakes. No heavy rains occurred during or immediately prior to the surveys, so conditions were usually dry, both on the surface and under rocks. Several pond basins were completely dry, whereas only two had standing water (see Appendix 2).

I recorded detailed written notes for all of my field observations (date, time, location, UTM coordinates, species, number of individuals, age/size, gender, habitat, behavior). These original field notes are included with this report.

Almost every location for each species was documented with a photograph of the amphibian or reptile and its habitat. However, several observations lack such documentation, particularly if the individual quickly escaped after being seen. Photographic vouchers for most of the individual amphibians and reptiles that I observed are included on the accompanying CD in the folder labeled "Photo Vouchers." The file names (e.g., AMTI01) correspond with those mentioned in the Access database, where the specific data for each individual can be found. The letters at the beginning of the file name refer to the first two letters of the generic and specific names for the species (e.g., AMTI = *Ambystoma tigrinum*).

My surveys were primarily searches done on foot as I walked through suitable habitat. I searched habitats and microhabitats likely to support species occurring in the region. In addition to several road searches listed in Appendix 3, I kept a close eye on road surfaces at all times as I traveled through BLCA and CURE.

Some sites were surveyed on multiple occasions. During each site visit I focused on trying to detect species not previously observed there. For example, along the Warner Point Trail (BLCA), I did not attempt to find tree lizards again after I had already documented their presence. Instead, I timed my surveys and selected specific search areas in order to maximize the chances of finding previously undetected species (e.g., dusk searches for gophersnakes, midday searches in hot weather and dense cover for striped plateau lizards).

I collected one shed skin to document the occurrence of the smooth green snake in BLCA. This specimen is included in the photo vouchers (see Appendix 4) but has not been deposited in a museum.

RESULTS AND DISCUSSION

Survey Results and Species List Status

Survey dates, times, and a summary of survey locations and results are summarized in Appendix 3. Photographic vouchers for all but one of the species I observed in BLCA and CURE are included in Appendix 4.

Overall, I documented amphibians or reptiles at 174 points (see accompanying Access database). I detected 11 species: 2 amphibians and 9 reptiles (Appendix 3). The plateau lizard (*Sceloporus tristichus* or *S. undulatus*), found on 28 surveys¹, was by far the most

¹ One survey is defined as a single block of time spent at a single location as listed in Appendix 3.

commonly detected species (117 individuals²). Tree lizards (*Urosaurus ornatus*), sagebrush lizards (*Sceloporus graciosus*), and western terrestrial garter snakes (*Thamnophis elegans*) were the other fairly common species. Other species were infrequently detected or highly localized. These results were not surprising, considering the location, elevation, and habitats of BLCA and CURE. None of my records are particularly noteworthy from a biogeographical or species distribution perspective.

Somewhat amazingly to me, I did not find one single amphibian or reptile dead on a road, and just one live lizard was seen on a road. As mentioned above, the high elevations and often cool nighttime temperatures were generally unfavorable for snake activity.

Amphibians

My observations of amphibians were restricted to wetlands at the east end of CURE and two stock ponds on the North Rim of BLCA. I found no amphibians along the small intermittent stream along the Chukar Trail in the Gunnison Gorge National Conservation Area just west of BLCA. The lower part of the stream course and its small pools were polluted with manure of the pack animals used to transport rafting gear down to the river. I detected no frogs of any kind in either of the two permanent or semi-permanent ponds in which I observed tiger salamanders at BLCA.

Tiger salamander (*Ambystoma tigrinum*)

BLCA:

Park Status: Present in Park

Abundance: Uncommon

Residency: Breeder

Nativity: Native

Comments: Previously reported/documented in the park by McCoy (1966) and Fallon (1997). I found populations in two stock ponds on the North Rim in 2004 (specific locations are indicated in Appendix 1, Map 7). These populations included numerous individuals (small and large larvae and adults) that I observed but did not capture and could not accurately count as they swam near the surface in the middle of the ponds. Based on these observations and the ease with which I captured larvae in shallow water with a dip net, I suspect that the populations each included at least 100 large (nonhatchling) larvae and adults. Three significant pond basins in Grizzly Gulch (North Rim), at least one of which historically contained tiger salamanders (based on museum records), were dry. These basins likely will be recolonized when they refill. The absence of heavy rains during or just prior to my surveys precluded observations of adult tiger salamanders crossing roads.

² During my surveys and in Appendix 3, the number of individuals detected does not include repeat observations of individuals seen on the same survey. For example, a lizard seen while I walked out along a trail was not recorded again when I walked back along the same route. Some individuals may have been counted twice if I saw them during subsequent surveys on different days.

CURE:**Park Status:** Probably Present**Abundance:** Likely Uncommon or Rare**Residency:** Breeder**Nativity:** Native

Comments: As far as I know, no hard evidence exists for the occurrence of this species in the park, but records from nearby areas (near Cerro Summit, UCM specimens) suggest that it may occur in the park, if any suitable stock ponds are available. I did not find any tiger salamanders (*Ambystoma tigrinum*) in CURE, but that may have been influenced by the lack of significant rainfall during my surveys. However, CURE boundaries are tightly circumscribed around the fish-stocked reservoirs and include very little suitable amphibian habitat.

Western chorus frog (*Pseudacris triseriata*)**BLCA:****Park Status:** Remove from list**Abundance:****Residency:****Nativity:**

Comments: This frog is widespread in western Colorado, but no evidence exists for its occurrence in BLCA. McCoy (1966) did not include it in his BLCA species list, and Fallon (1997) mentioned no observations. The narrow canyons of the Gunnison River and its reservoirs are unsuitable for chorus frog breeding and only marginally suitable as transient habitat. The frogs might conceivably occur in areas where the canyon widens and there is at least a little bit of floodplain available but, given the complete lack of records for this easily detected frog, I suggest that it be removed from the BLCA species list.

CURE:**Park Status:** Present in Park**Abundance:** Common to Uncommon**Residency:** Breeder**Nativity:** Native

Comments: I heard this frog in a few locations at the eastern end of CURE, including artificial ponds adjacent to Highway 50 (Appendix 2) and in the wetlands in the Neversink area. Suitable habitat is scarce elsewhere in CURE, so the species likely occurs in few if any other locations. CURE boundaries are tightly circumscribed around the fish-stocked reservoirs and include very little suitable amphibian habitat. My searches of ponded areas on tributaries behind road crossings in CURE yielded only the few calling chorus frogs but no amphibian larvae, despite careful searches. This frog is relatively short-lived and not highly dispersive, so its presence generally indicates recent breeding.

American bullfrog (*Rana catesbeiana*)

BLCA:

Park Status: Remove from list

Abundance:

Residency:

Nativity:

Comments: These frogs are highly mobile, and it seems possible that dispersing individuals might rarely appear in the park (most likely along the Gunnison River in the extreme western end of the park). However, there is no evidence for the occurrence of this frog in BLCA, and suitable breeding habitat appears to be absent. I suggest that the species be removed from the park list.

Northern leopard frog (*Rana pipiens*)

BLCA:

Park Status: Unconfirmed

Abundance: Uncommon, Rare, or Occasional

Residency: Breeder or Vagrant

Nativity: Native

Comments: There is an old museum record (one specimen in the University of Michigan Museum of Zoology, UMMZ 122926, “Black Canyon of the Gunnison National Monument,” 13 July 1961) for this species, and Myron Chase (pers. comm., 2004) recalls seeing leopard frogs in the past in Red Red Canyon, which they may access along an irrigation ditch that connects with the creek. Perhaps they colonize the creek periodically during wet years. McCoy (1966) stated that these frogs are found along the river in the canyon and near permanent water sources on the rims, but he cited no specific records or documentation. I did not see any evidence of leopard frogs in the two ponds I searched on the North Rim of BLCA. Populations of this species appear to be dynamic, so extirpations and colonizations may be expected. I did not survey Red Rock Canyon, so I cannot evaluate the current status of amphibians there. Future studies should determine whether this frog breeds in Red Rock Canyon. Such surveys could be conducted almost anytime between April and October; surveys of ponds and pools along low-gradient watercourses in May or June would be informative because breeding locations (if any) would be revealed through the presence of larvae (which metamorphose in early summer). Elsewhere in the park, there is no evident breeding habitat and the frog seems to be absent (or may occasionally appear as a dispersing vagrant at best). This species has disappeared from many parts of its historical range in Colorado. The lack of recent sightings in BLCA and CURE may reflect this overall decline in distribution and abundance in the Southern Rocky Mountain region.

CURE:

Park Status: Unconfirmed

Abundance: Uncommon, Rare, or Occasional

Residency: Breeder or Vagrant

Nativity: Native

Comments: Old records exist for widely scattered locations in the CURE area (junction of Red Creek and Gunnison River; Lake Fork, Gunnison River; junction of Cimarron Creek and Gunnison River; all documented by specimens in the University of Utah museum). However, these collections pre-date reservoir construction, which likely eliminated most suitable breeding habitat in CURE. Some suitable breeding habitat appears to remain in the Neversink-Beaver Creek area, but I found no leopard frogs or larvae there. Apparently suitable habitat occurs along the Gunnison River east of CURE, and frogs from this area may periodically disperse westward into CURE even if they do not breed there.

Reptiles

It was relatively easy to document the presence of all but one of BLCA's lizards that were listed as "present in park" prior to my inventory, particularly in the lowland areas in the far western end of BLCA, where collared lizards (*Crotaphytus collaris*) and striped plateau lizards (*Aspidoscelis velox*) occur in addition to the more widespread sagebrush lizards, tree lizards, and ubiquitous plateau lizards. However, I did not find any short-horned lizards (*Phrynosoma hernandesi*) in BLCA or CURE.

In CURE, I found several reptile species (sagebrush lizard, plateau lizard, smooth green snake, and terrestrial garter snake) that were listed as "probably present" there. Museum records from prior to the establishment of CURE documented the presence of most of these species in the area, so my observations were not unexpected.

Garter snakes (*Thamnophis elegans*) were fairly common along the Gunnison River, its tributaries, and in some upland areas in BLCA and CURE, but I infrequently encountered other snake species during my surveys in BLCA and CURE in 2004.

Plateau striped whiptail (*Aspidoscelis velox*)

BLCA:

Park Status: Present in Park

Abundance: Common

Residency: Breeder

Nativity: Native

Comments: I found these whiptails in the extreme western part of BLCA (inside the park in the Red Rocks area and along the drainage that goes southeastward from the Chukar Trail, and west of the park in the adjacent Gunnison Gorge National Conservation Area). McCoy (1966) also reported them to occur only at lower elevations near the western boundary of the park. Fallon (1997) reported them from the Warner Point Trail and along the Warner Route (near saddle), but I did not see them in those locations in 2004.

This species was formerly known as *Cnemidophorus velox*. The generic allocation of native North American whiptail lizards was recently changed to *Aspidoscelis* (Reeder et al. 2002, Crother et al. 2003).

Eastern collared lizard (*Crotaphytus collaris*)

BLCA:

Park Status: Present in Park

Abundance: Common

Residency: Breeder

Nativity: Native

Comments: This lizard is mostly restricted to the rocky lowlands at the western margin of BLCA (e.g., the Red Rocks area), where appears to be relatively common. It also sometimes ascends to higher elevations on adjacent ridges. For example, I found one inside the park at an elevation of about 7,382 feet in the western end of BLCA, northwest of the Red Rocks area. I have a report of one seen decades ago by a reliable observer on the South Rim just west of the High Point at about 8,000 feet. I did not see any in that area in 2004, nor did Fallon (1997) report any in that location.

Greater short-horned lizard (*Phrynosoma hernandesi*)

BLCA:

Park Status: Present in Park

Abundance: Rare

Residency: Breeder

Nativity: Native

Comments: McCoy (1966) stated that this lizard is rare in BLCA. Myron Chase (pers. comm., 2004) has “on rare occasions ran across them primarily out on the west end of Black Canyon, west of Red Rock Canyon, in the desert shrub communities.” The only museum specimen of which I am aware is from the North Rim at Serpent Point (University of Colorado Museum 13684, collected 17 August 1957 by Beidleman and Hamilton, verified by G. Hammerson). An intensive search at Serpent Point yielded many lizards of three species but no horned lizards, which appear to be at best a rarity in BLCA. However, these lizards easily can be overlooked in areas where they do indeed occur, so I assume they still occur in BLCA. The population probably has been depleted as a result of casual collection by tourists in frequently visited areas at rim overlooks, the open areas of which provide favorable habitat for this species.

CURE:

Park Status: Remove from list

Abundance:

Residency:

Nativity:

Comments: No evidence exists for the occurrence of this lizard in or near CURE. I know of no records at all for Gunnison County. The closest record is from Serpent Point in BLCA. It seems unlikely that it occurs in CURE.

Common sagebrush lizard (*Sceloporus graciosus*)

BLCA:

Park Status: Present in Park

Abundance: Abundant

Residency: Breeder

Nativity: Native

Comments: Sagebrush lizards are abundant on both rims at the higher elevations of BLCA (e.g., North Vista Trail, Warner Point Trail), especially near fallen trees in pinyon-juniper woodlands. Fallon (1997) reported these lizards from rocks along the river at East Portal, but I found only plateau lizards there.

CURE:

Park Status: Present in Park

Abundance: Abundant

Residency: Breeder

Nativity: Native

Comments: I found numerous sagebrush lizards along the Hermits Rest Trail, but just one along the Mesa Creek Trail and none elsewhere in CURE, where plateau lizards are common. Old (pre-reservoir) museum records (University of Utah) expand the range to near (3/4 mile W of) Sapinero.

Plateau lizard (*Sceloporus tristichus*)

BLCA:

Park Status: Present in Park

Abundance: Abundant

Residency: Breeder

Nativity: Native

Comments: This is by far the most common and ubiquitous reptile in BLCA. It ranges from the highest elevations to the lowest, wherever there are rocks.

Until recently, this lizard was known as *Sceloporus undulatus*. The taxonomy of this lizard remains debatable, but based on genetic data Leaché and Reeder (2002) and Crother et al. (2003) divided *S. undulatus* into multiple species and applied the name *S. tristichus* to the populations in western Colorado.

CURE:

Park Status: Present in Park

Abundance: Abundant

Residency: Breeder

Nativity: Native

Comments: This is by far the most common and ubiquitous reptile in CURE. It ranges from the highest elevations to the lowest, wherever there are rocks.

Tree lizard (*Urosaurus ornatus*)

BLCA:

Park Status: Present in Park

Abundance: Common

Residency: Breeder

Nativity: Native

Comments: In 2004, tree lizards were relatively common in areas with cliffs and massive rocks, in areas ranging from the lowest parts of the canyon in extreme western BLCA to the highest sections of rimrock along the north and south rims, all the way to Deadhorse Gulch Overlook. Fallon (1997) spent considerable time and set traps along the Warner Point Trail and upper Warner Route, where I documented tree lizards in 2004, but she never found this species in those areas. However, she may not have searched the specific habitat (steep massive rock exposures) favored by tree lizards.

CURE:

Park Status: Unconfirmed

Abundance:

Residency:

Nativity:

Comments: It seems possible that tree lizards may occur in localized areas of not-easily-accessible suitable habitat in the western part of CURE, west of Morrow Point Dam, but I did not find any at East Portal or along Crystal Creek Trail or Mesa Creek Trail. Rock outcroppings and cliffs east of the Morrow Point Dam yielded many plateau lizards but no tree lizards.

Side-blotched lizard (*Uta stansburiana*)

BLCA:

Park Status: Remove from list

Abundance:

Residency:

Nativity:

Comments: These lizards have never been recorded in BLCA, nor anywhere else in eastern Montrose County or in Gunnison County. The species might be expected to occur in BLCA only in the lowest elevations at the extreme western margin of BLCA, including arroyos, desert shrublands along drainages, and the river canyon and the mouths of its side canyons. In 2004, I found lizards of generally less common species in all of these areas, but no side-blotched lizards. These lizards are hard to overlook. I conclude that they do not occur in BLCA and should be removed from the species list.

Midget faded rattlesnake (*Crotalus oreganus concolor*)

BLCA:

Park Status: Remove from list

Abundance:

Residency:

Nativity:

Comments: McCoy (1966) mentioned unsubstantiated reports of rattlesnakes from near the river in the western and eastern (East Portal) parts of BLCA, but I am aware of no evidence that this species actually occurs in the park. Possibly the reported rattlesnakes were misidentified gophersnakes (*Pituophis catenifer*). Rattlesnakes have been reported from the nearby Gunnison Gorge NCA (I'm not aware of specific locations), so possibly they may occur along the Gunnison River canyon in the extreme western part BLCA. Given the number of anglers that use the East Portal area, it seems probable that a rattler would have been killed and brought to light by now, if rattlesnakes actually occur there. Given the lack of any reliable reports from the park, I suggest that the species be removed from the list.

The taxonomy of this snake, also known as *Crotalus viridis*, is not completely resolved, but there appears to be a consensus that *Crotalus oreganus* is the name that should be applied to rattlesnakes in region drained by the Gunnison River in western Colorado (Crother et al. 2003); geographic considerations indicate that the subspecies would be *C. oreganus concolor*.

Great Plains ratsnake (*Elaphe emoryi*)

BLCA:

Park Status: Remove from list

Abundance:

Residency:

Nativity:

Comments: No records of occurrence for this snake exist for areas in or near the park. There is a remote chance that this riparian-corridor snake occurs in the Gunnison River canyon at the extreme western margin of BLCA, but that is purely speculative.

Milksnake (*Lampropeltis triangulum*)

BLCA:

Park Status: Probably Present

Abundance: Occasional

Residency: Breeder

Nativity: Native

Comments: See comments for CURE.

CURE:

Park Status: Probably Present

Abundance: Occasional

Residency: Breeder

Nativity: Native

Comments: The only occurrence that I know about is based on a snake "picked up a few years ago along the East Portal Road" (Myron Chase, pers. comm., 2004). It had been hit by a car and was brought in by a park visitor. Based on a conversation with the park

visitor, Chase believes that the snake was in CURE, but the exact location is unknown. The specimen no longer exists (M. Chase, pers. comm., 2005), but specimens of this species from western Colorado are unlikely to be misidentified. This record suggests that milksnakes may occur along the canyon in BLCA and at the lowest elevations in the western part of CURE. These secretive snakes are difficult to detect, except on roads, so additional information on the status of this snake in the region will be very difficult to obtain. Finding this snake is a largely a matter of persistence (frequently being in the habitat) and good luck. Likely habitats in the BLCA-CURE area include lowland riparian zones and shrubby slopes above and within a few hundred meters of streams.

Striped whipsnake (*Masticophis taeniatus*)

BLCA:

Park Status: Probably Present

Abundance: Rare

Residency: Breeder

Nativity: Native

Comments: McCoy (1966) stated that this snake has been found in BLCA in the side canyons and on the south rim. He characterized it as an uncommon lowland species that barely enters BLCA. I know of no other evidence for the occurrence of this snake in BLCA. Despite intensive investigation, I found no museum records or other tangible documentation that substantiates McCoy's report. McCoy was associated with museums and often collected specimens, but apparently he never obtained any specimens from BLCA. Fallon (1997) did not find any striped whipsnakes during her surveys. In 2004, I found one striped whipsnake at the bottom of the Chukar Trail, near the Gunnison River (the snake crawled onto a rock and attacked a plateau lizard that I was trying to photograph!). This location is approximately 0.5 km west of the BLCA western boundary, so it is likely that this snake does occur within BLCA, most likely only in the western lowlands where lizards (the primary prey) are numerous.

Smooth greensnake (*Opheodrys vernalis*)

BLCA:

Park Status: Present in Park

Abundance: Uncommon

Residency: Breeder

Nativity: Native

Comments: These snakes occur along the canyon bottom and in the Gambel oak woodlands along the rim trails (McCoy 1966). McCoy stated that there were no records from the North Rim, but the University of Colorado Museum (UCM) in Boulder has specimens from both rims, and I found this snake on both rims in 2004. It has been found at East Portal (UCM, Fallon 1997).

UCM specimen data: *Black Canyon of the Gunnison*, 6 September 1948 (UCM 5798); *East Portal, Gunnison River 5700'* [note: this location could be in CURE], 25 June 1963 (UCM 20514); *Black Canyon National Monument, SE of Headquarters, North*

Rim, S Ned Allen's Pond, 7900', 17 August 1957 (UCM 13725); Black Canyon of the Gunnison National Monument, South Rim, 10 July 1962 (UCM 20513).

Some herpetologists refer to this snake as *Liochlorophis vernalis*.

CURE:

Park Status: Present in Park

Abundance: Uncommon

Residency: Breeder

Nativity: Native

Comments: I documented this snake along the Mesa Creek Trail in CURE in 2004. My record of the smooth green snake in CURE may be the first documented observation of the species in that unit, but there are multiple prior records from nearby "East Portal" (which in a general sense encompasses both BLCA and CURE). A sight record was previously available for CURE (John Chapman, summer 1991).

Gophersnake (*Pituophis catenifer*)

BLCA:

Park Status: Present in Park

Abundance: Uncommon

Residency: Breeder

Nativity: Native

Comments: McCoy (1966) stated that this is the most common snake found in the monument, so I expected to find gophersnakes more frequently than I did in 2004. In fact, I found only one live one (along the Gunnison River at the extreme western edge of BLCA). Despite frequent travel throughout BLCA and CURE, I found no road-killed snakes (gophersnakes are the snake most frequently killed on roads in Colorado). A park ranger told me about a recent (2004) sighting of a gophersnake on the Warner Point Trail. Sylvia Fallon's 1997 surveys yielded sightings of that species in the same area (Warner Point Trail and upper Warner Route). Staff at the ranger station on the North Rim (BLCA) reported occasional sightings of gopher snakes just outside the ranger station building and on the rim road. I conclude that gophersnakes are widely but sparsely distributed in BLCA.

CURE:

Park Status: Probably Present

Abundance: Uncommon to Rare

Residency: Breeder

Nativity: Native

Comments: There is an old museum record (UCM) for a location 18.5 road miles west of Sapinero along Highway 92, which would be near the Hermits Rest trailhead (upper end). Gophersnakes probably occur in the lower and/or western parts of CURE, but better information on the occurrence of this snake in CURE is needed.

Terrestrial gartersnake (*Thamnophis elegans*)

BLCA:

Park Status: Present in Park

Abundance: Common

Residency: Breeder

Nativity: Native

Comments: I found that terrestrial gartersnakes are relatively common in searched areas along the Gunnison River from the extreme western lowlands of BLCA to East Portal. They also occur in various upland areas, such as along the Warner Point Trail and upper Warner Route (Fallon 1997). McCoy (1966) stated that these snakes occur only near permanent water, which is consistent with my observations in BLCA, but I have seen terrestrial garter snakes in upland habitats in many other areas in western Colorado, including CURE.

CURE:

Park Status: Present in Park

Abundance: Common

Residency: Breeder

Nativity: Native

Comments: In 2004, terrestrial gartersnakes were relatively common along the Gunnison River and the lower parts of its tributaries in CURE, from the Neversink area in the east to East Portal in the west. I also found them in ridgetop shrublands, such as along the Crystal Creek Trail in western CURE.

Summary of Recommended Changes in Species Lists for BLCA and CURE

Based on the surveys in 2004 and my assessment of previous information, I recommend that several changes be made in the species lists and species status for BLCA and CURE (Table 1, next page). The reasoning is explained in the preceding species accounts. Some of the changes upgrade the status (e.g., from Probably Present to Present in Park) whereas other changes reflect a lack of evidence and substantial doubt that the species occurs in a given unit. One species (collared lizard) is readded to the list for BLCA. Greater short-horned lizard is recommended for removal from the CURE list, and the western chorus frog, American bullfrog, side-blotched lizard, midget faded rattlesnake, and Great Plains ratsnake are recommended for removal from the BLCA list.

Assessment of Inventory Completeness and Suggestions for Further Study

My surveys in 2004 allowed me to characterize the composition of the lizard faunas of BLCA and CURE with a high degree of confidence. Relatively few questions

Table 1. Species status of amphibians and reptiles in BLCA and CURE. X = Status prior to 2004 surveys. * = recommended status change. Shaded areas highlight recommended changes.

	CURE						BLCA				
	Present in Park	Probably Present	Unconfirmed	Detected in 2004	Remove from list?		Present in Park	Probably Present	Unconfirmed	Detected in 2004	Remove from list?
<i>Ambystoma tigrinum</i>		X		N	N		X			Y	N
<i>Pseudacris triseriata</i>	X			Y	N			X		N	Y
<i>Rana catesbeiana</i>								X	*	N	Y
<i>Rana pipiens</i>		X		N	N			X		N	N
<i>Aspidoscelis velox</i>							X			Y	N
<i>Crotalus oreganus concolor</i>									X	N	N
<i>Crotaphytus collaris (add to list)</i>							*			Y	N
<i>Elaphe emoryi</i>									X	N	N
<i>Lampropeltis triangulum</i>		*		N	N			*	X	N	N
<i>Opheodrys vernalis</i>	*	X		Y	N		X			Y	N
<i>Masticophis taeniatus</i>				N			X	*		Nearby	N
<i>Phrynosoma hernandesi</i>			X	N	Y		X	*		N	N
<i>Pituophis catenifer</i>		X		N	N		X			Y	N
<i>Sceloporus graciosus</i>	*	X		Y	N		X			Y	N
<i>Sceloporus tristichus</i>	*	X		Y	N		X			Y	N
<i>Thamnophis elegans</i>	*	X		Y	N		X			Y	N
<i>Urosaurus ornatus</i>			*	N	N		X			N	N
<i>Uta stansburiana</i>				N					X	N	Y

remain, the primary one of which pertains to the current status of the greater short-horned lizard.

In contrast to the lizards, the possible presence of a few snake species that are hard to find in rugged, largely roadless terrain confounds reliable determination of the snake faunas of the two park units. Probably the best way to clarify the questionable status of these species is not through additional directed surveys but rather through making the situation known to regular park staff who travel through the parks on a daily basis and who by chance might eventually discover, directly or indirectly (through a park visitor), one or more of these species.

Amphibians also present some uncertainties, primarily concerning the status of the northern leopard frog in both CURE and BLCA. Reservoir construction certainly eliminated much habitat and likely extirpated some populations, particularly in CURE. Further directed inventories are needed to determine if the species remains in (or periodically disperses into) the wetlands at the extreme eastern end of CURE or the stream course in Red Rock Canyon in BLCA.

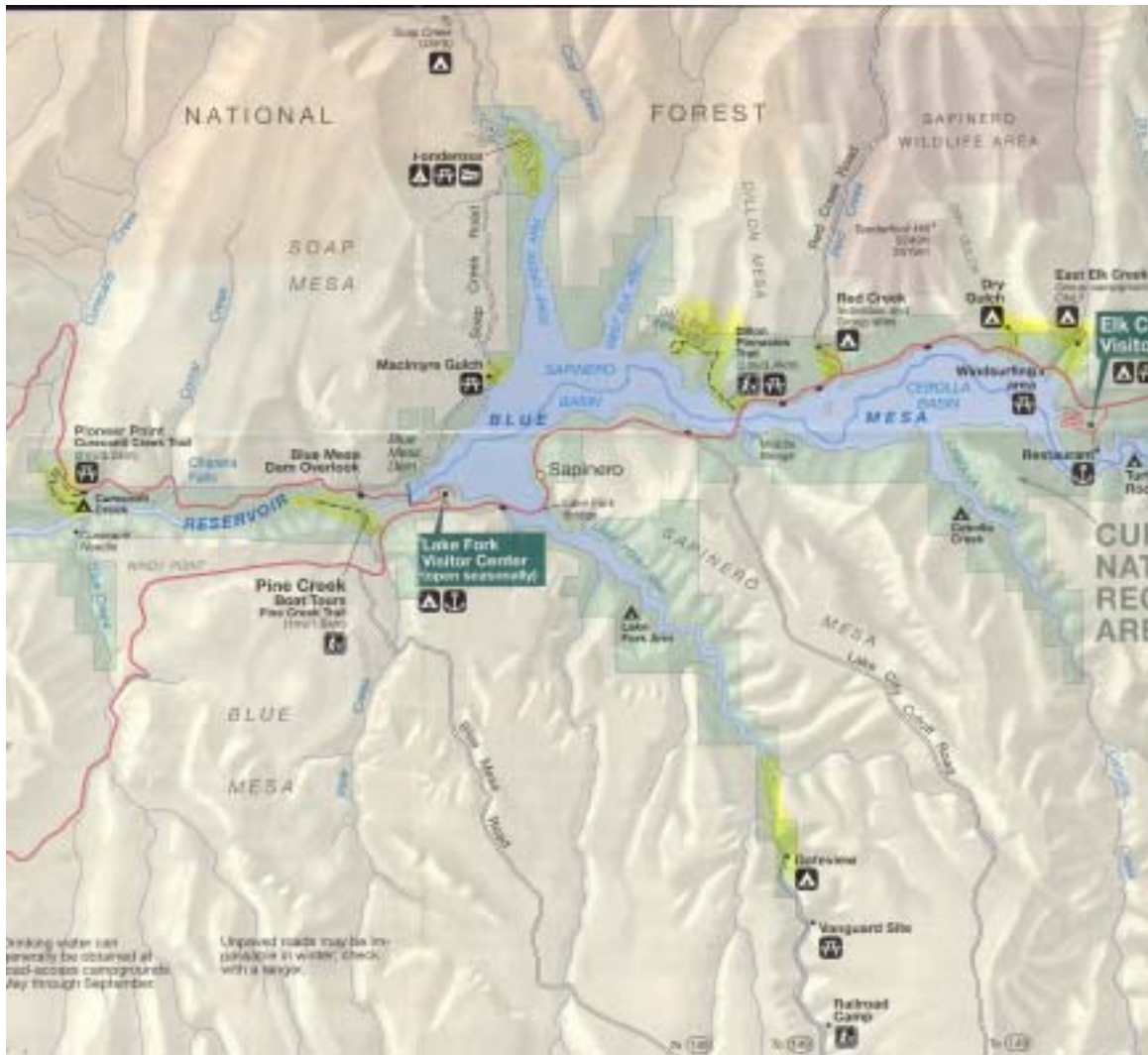
LITERATURE CITED

- Crother, B. I., J. Boundy, J. A. Campbell, K. de Quieroz, D. Frost, D. M. Green, R. Highton, J. B. Iverson, R. W. McDiarmid, P. A. Meylan, T. W. Reeder, M. E. Seidel, J. W. Sites, Jr., S. G. Tilley, and D. B. Wake. 2003. Scientific and standard English names of amphibians and reptiles of North America north of Mexico: update. *Herpetological Review* 34:198-203.
- Fallon, S. 1997. Herpetofauna survey 1997. Unpublished report.
- Leaché, A. D., and T. W. Reeder. 2002. Molecular systematics of the eastern fence lizard (*Sceloporus undulatus*): a comparison of parsimony, likelihood, and Bayesian approaches. *Systematic Biology* 51:44-68.
- McCoy, C. J., Jr. 1966. An annotated list of the amphibians and reptiles of Black Canyon of the Gunnison National Monument. Unpublished report.
- Reeder, T. W., C. J. Cole, and H. C. Dessauer. 2002. Phylogenetic relationships of whiptail lizards of the genus *Cnemidophorus* (Squamata: Teiidae): a test of monophyly, reevaluation of karyotypic evolution, and review of hybrid origins. *American Museum Novitates* (3365):1-61.

Appendix 1. Primary amphibian and reptile survey locations in BLCA and CURE in 2004.



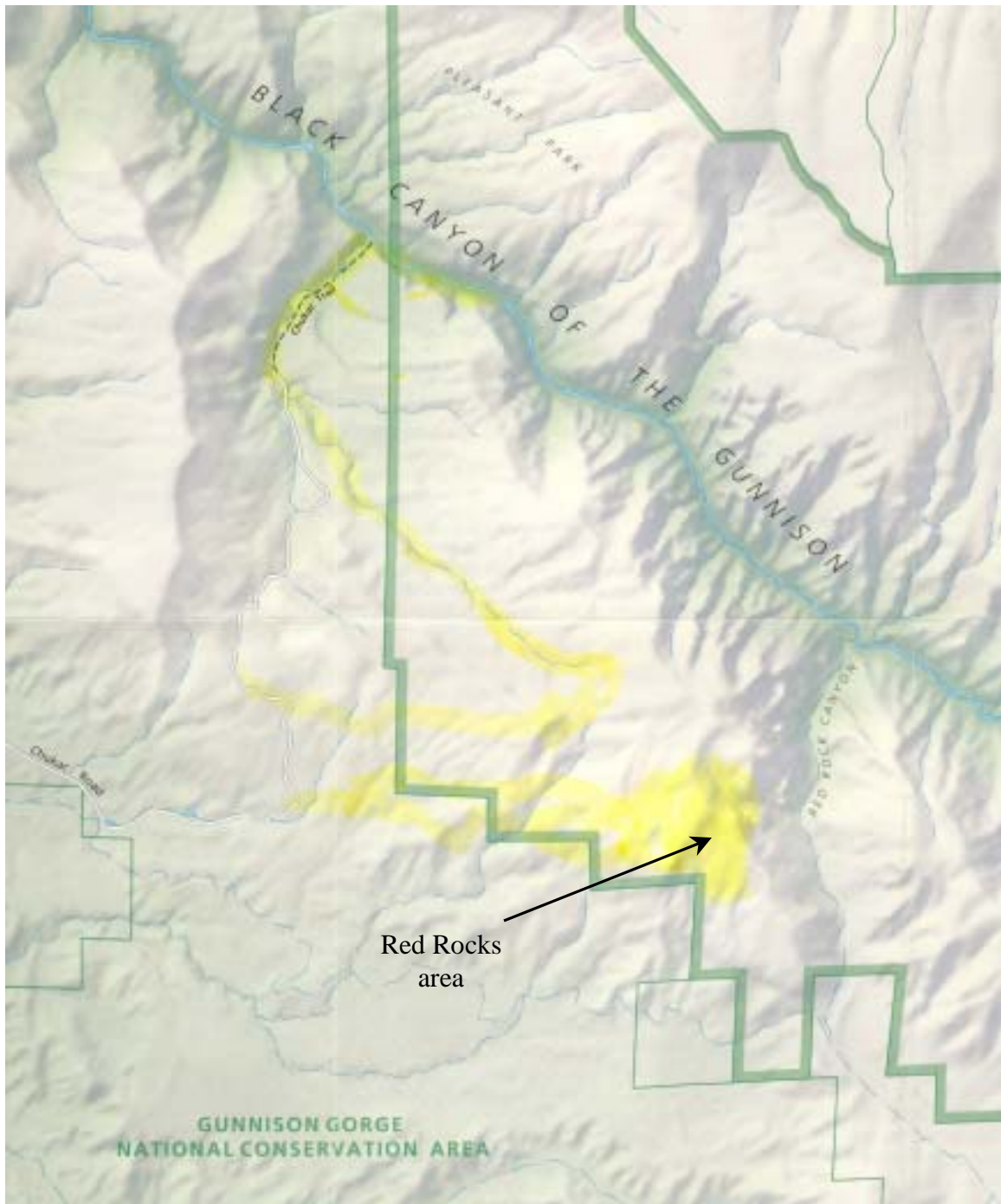
Map 1. Primary survey areas (yellow) in the western part of CURE.



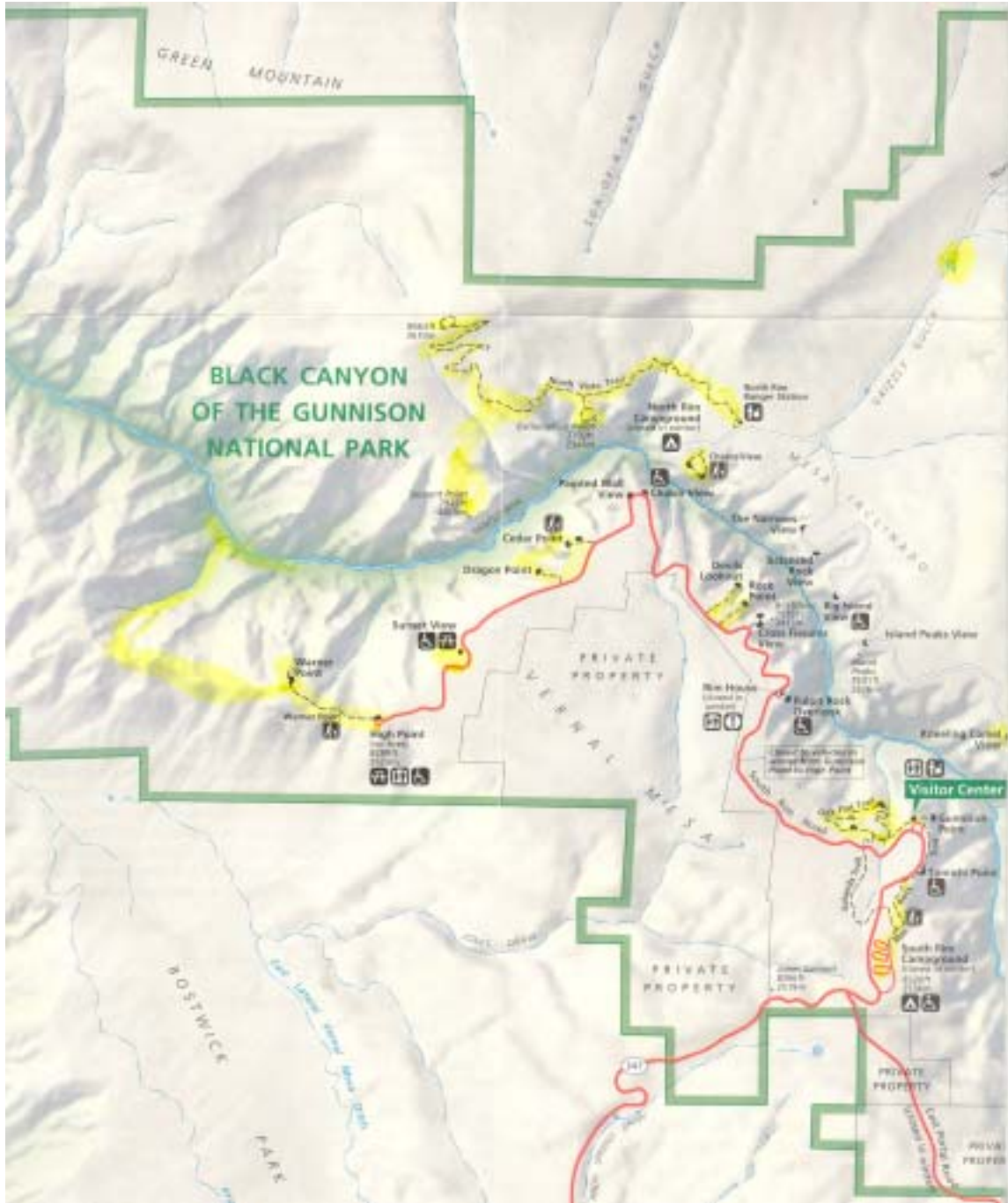
Map 2. Primary survey areas (yellow) in the central part of CURE.



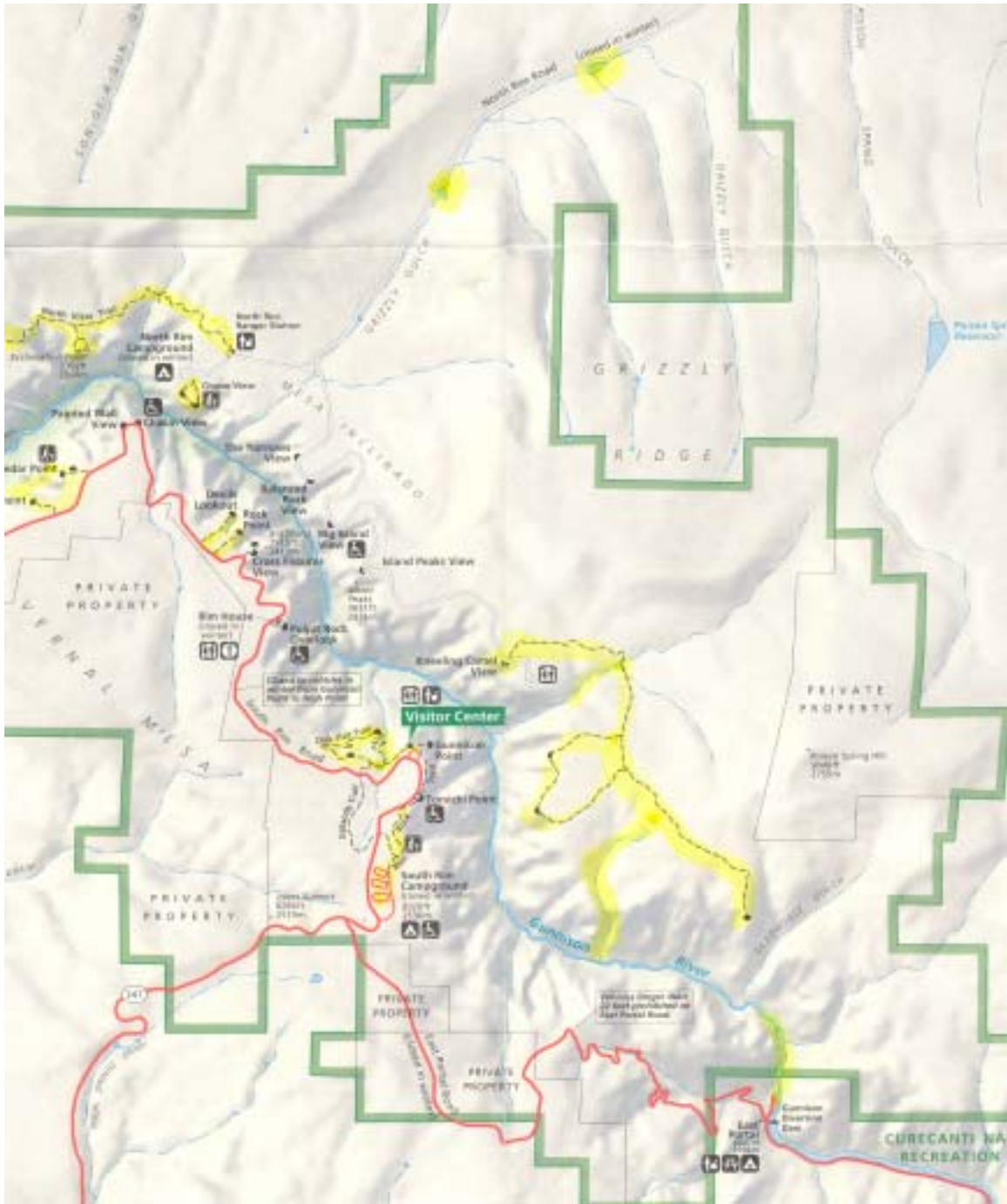
Map 3. Primary survey areas (yellow) in the eastern part of CURE.



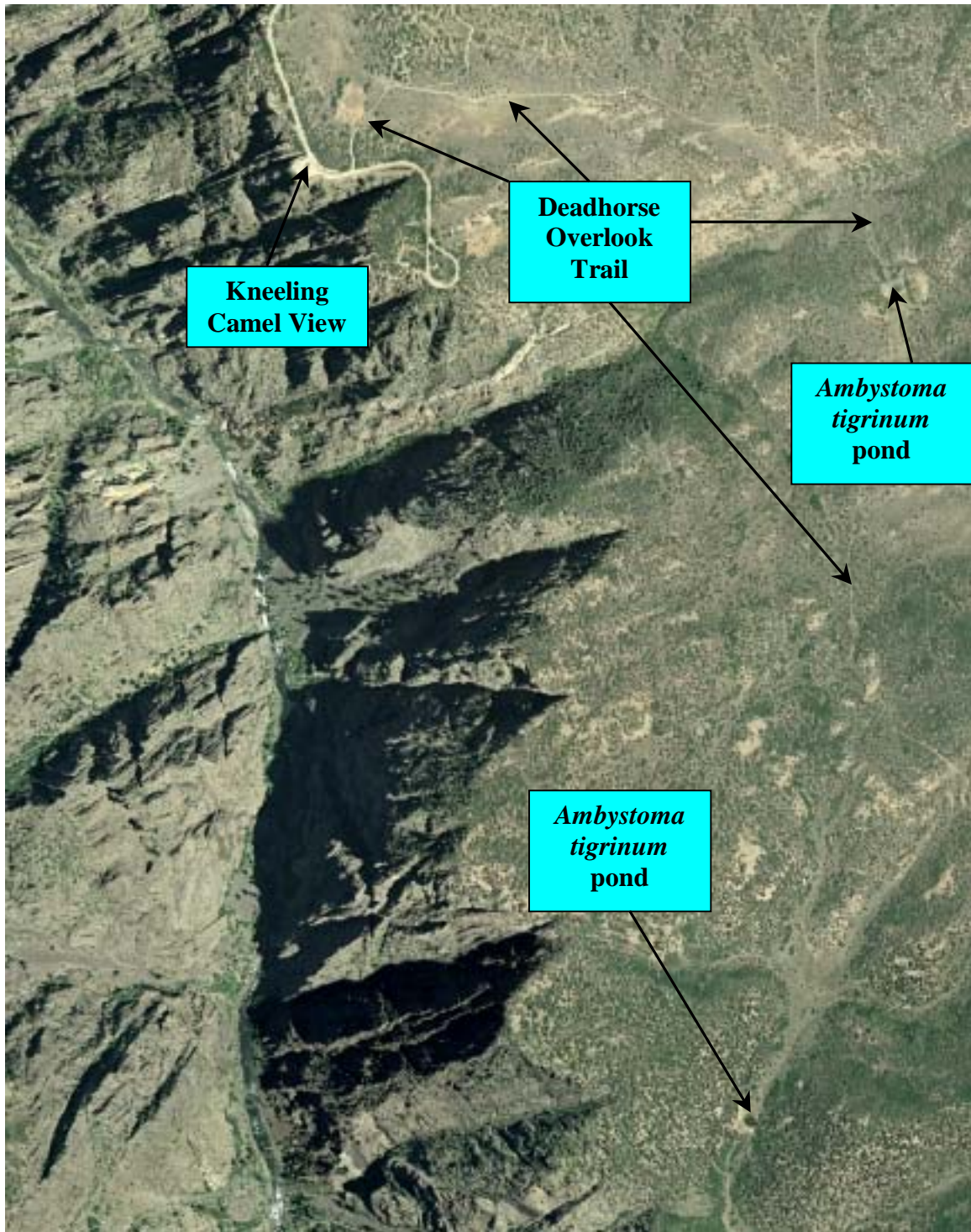
Map 4. Primary survey areas (yellow) in western part of BLCA and adjacent Gunnison Gorge National Recreation Area. Survey areas in the southern part of the map are approximate.



Map 5. Primary survey areas (yellow) in central part of BLCA.



Map 6. Primary survey areas (yellow) in eastern part of BLCA.



Map 7. Locations of two ponds in which tiger salamanders (*Ambystoma tigrinum*) were found in 2004, Black Canyon of the Gunnison National Park, North Rim.

Appendix 2. Photographs of selected areas surveyed for amphibians and reptiles in BLCA and CURE during 2004.



Mesa Creek Trail (CURE), 1 June 2004. Habitat of plateau lizard (*Sceloporus tristichus*), sagebrush lizard (*Sceloporus graciosus*), and smooth green snake (*Opheodrys vernalis*).



Above Dry Gulch Campground (CURE), 2 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Above East Elk Picnic Area (CURE), 2 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Cooper Ranch (CURE), 2 June 2004. Terrestrial gartersnake (*Thamnophis elegans*) habitat.



Gunnison River at Cooper Ranch (CURE), 2 June 2004. Terrestrial gartersnake (*Thamnophis elegans*) habitat.



Western chorus frog (*Pseudacris triseriata*) habitat near Cooper Ranch (CURE), 2 June 2004



Dillon Pinnacles (CURE), 3 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Crystal Creek Trail (CURE), 3 June 2004. Terrestrial gartersnake (*Thamnophis elegans*) habitat.



Curecanti Creek Trail (CURE), 4 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Red Creek (CURE), 5 June 2004. Terrestrial gartersnake (*Thamnophis elegans*) habitat.



Hills west of Beaver Creek (CURE), 5 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Oak Flat Trail (BLCA), 11 June 2004.



Desert shrubland near Red Rocks (BLCA), 12 June 2004. Collared lizard (*Crotaphytus collaris*) and plateau striped whiptail (*Aspidoscelis velox*) habitat.



Rocky pinyon-juniper near Red Rocks (BLCA), 12 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Red Rocks (BLCA), 12 June 2004. Habitat of plateau lizard (*Sceloporus tristichus*), tree lizard (*Urosaurus ornatus*), and plateau striped whiptail (*Aspidoscelis velox*).



Near Red Rocks (western BLCA), 12 June 2004. Tree lizard (*Urosaurus ornatus*) habitat.



East of Chukar Trail, south of Gunnison River (BLCA), 13 June 2004. Habitat of plateau lizard (*Sceloporus tristichus*), collared lizard (*Crotaphytus collaris*), and plateau striped whiptail (*Aspidoscelis velox*).



East of Chukar Trail, south of Gunnison River (BLCA), 13 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



East of Chukar Trail, south of Gunnison River (BLCA), 13 June 2004. Plateau lizard (*Sceloporus tristichus*) and tree lizard (*Urosaurus ornatus*) habitat.



Warner Point Trail (BLCA), 14 June 2004. Plateau lizard (*Sceloporus tristichus*) and tree lizard (*Urosaurus ornatus*) habitat.



Warner Point Trail (BLCA), 14 June 2004. Sagebrush lizard (*Sceloporus graciosus*) habitat.



Gunnison River at East Portal (BLCA), 14 June 2004. Plateau lizard (*Sceloporus tristichus*) and terrestrial gartersnake (*Thamnophis elegans*) habitat.



Above Beaver Creek (CURE), 16 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Along Gunnison River east of Beaver Creek (CURE), 16 June 2004. Habitat of terrestrial gartersnake (*Thamnophis elegans*). No amphibians found here.



Gateview, Lake Fork (CURE), 16 June 2004. No amphibians or reptiles detected here.



Dry pond basin (BLCA, North Rim), 17 June 2004.



Dry pond basin (BLCA, North Rim), 18 June 2004.



Exclamation Point (BLCA, North Rim), 17 June 2004. Plateau lizard (*Sceloporus tristichus*) and tree lizard (*Urosaurus ornatus*) habitat.



North Vista Trail (BLCA, North Rim), 17 June 2004. Sagebrush lizard (*Sceloporus graciosus*) habitat.



View toward Serpent Point, Green Mountain Trail (BLCA, North Rim), 17 June 2004. Habitat of plateau lizard (*Sceloporus tristichus*), sagebrush lizard (*Sceloporus graciosus*), tree lizard (*Urosaurus ornatus*), and (historically) short-horned lizard (*Phrynosoma hernandesi*).



Near Deadhorse Overlook Trail (BLCA, North Rim), 18 June 2004. Smooth greensnake (*Opheodrys vernalis*) habitat.



Stock pond along Deadhorse Overlook Trail (BLCA, North Rim), 18 June 2004. Tiger salamander (*Ambystoma tigrinum*) habitat.



Deadhorse Overlook Trail (BLCA, North Rim), 18 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Chukar Trail, Gunnison Gorge National Conservation Area, 19 June 2004. Habitat of plateau lizard (*Sceloporus tristichus*), plateau striped whiptail (*Aspidoscelis velox*), and striped whipsnake (*Masticophis taeniatus*).



Gunnison River, east of Chukar Trail boat launch (BLCA), 19 June 2004. Habitat of plateau lizard (*Sceloporus tristichus*), tree lizard (*Urosaurus ornatus*), terrestrial gartersnake (*Thamnophis elegans*), and gophersnake (*Pituophis catenifer*).



Extreme west boundary of BLCA along Gunnison River, 19 June 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Along lower Chukar Trail, Gunnison Gorge National Conservation Area, 19 June 2004. This intermittent stream is heavily impacted by manure from livestock used to transport rafting gear down to the river.



Mesa Creek Trail (CURE), 19 June 2004. Smooth green snake (*Opheodrys vernalis*) and plateau lizard (*Sceloporus tristichus*) habitat.



Hermits Rest Trail (CURE), 20 June 2004. Habitat of sagebrush lizard (*Sceloporus graciosus*).



Morrow Point Reservoir at bottom of Hermits Rest Trail (CURE), 20 June 2004. Devoid of amphibians.



Stock pond south of Deadhorse Overlook Trail (BLCA, North Rim), 21 June 2004. Habitat of tiger salamander (*Ambystoma tigrinum*).



Edge of Blue Mesa Reservoir along Dillon Pinnacles Trail, 6 August 2004. Devoid of amphibians.



Gunnison River near Neversink Trail (CURE), 6 August 2004. Terrestrial gartersnake (*Thamnophis elegans*) habitat.



Steuben Creek at U.S. Hwy 50 (CURE), 6 August 2004. Devoid of amphibians.



Pine Creek Trail (CURE), 7 August 2004. Terrestrial gartersnake (*Thamnophis elegans*) habitat.



Lower Chukar Trail, Gunnison Gorge National Conservation Area, 8 August 2004. Habitat of plateau lizard (*Sceloporus tristichus*), plateau striped whiptail (*Aspidoscelis velox*), and striped whipsnake (*Masticophis taeniatus*).



Rock Point (BLCA, South Rim), 8 August 2004. Plateau lizard (*Sceloporus tristichus*) habitat.



Devils Lookout Trail (BLCA, South Rim), 9 August 2004. Habitat of plateau lizard (*Sceloporus tristichus*), tree lizard (*Urosaurus ornatus*) (distant cliffs), and smooth green snake (*Opheodrys vernalis*).



Serpent Point (BLCA, North Rim), 10 August 2004. Habitat of plateau lizard (*Sceloporus tristichus*), tree lizard (*Urosaurus ornatus*), and (historically) short-horned lizard (*Phrynosoma hernandesi*).



Gunnison River at bottom of Warner Route (BLCA), 12 August 2004. Habitat of plateau lizard (*Sceloporus tristichus*) and tree lizard (*Urosaurus ornatus*).



Along Warner Route at saddle near top of route (BLCA), 13 August 2004. Habitat of plateau lizard (*Sceloporus tristichus*) and tree lizard (*Urosaurus ornatus*).

Appendix 3. Tabular results of amphibian and reptile surveys in BLCA and CURE in 2004.

Date	Time (MDT)	NPS Unit	Location	Observers (GH: G. Hammerson, SF: S. Frimel)	Type of Survey	Tiger salamander	Western chorus frog	Collared lizard	Sagebrush lizard	Plateau lizard	Tree lizard	Striped plateau lizard	Smooth green snake	Striped whipsnake	Gopher snake	Terrestrial gartersnake
1-Jun-04	1500-1650	CURE	Mesa Creek Trail	GH, SF	Foot					1						
2-Jun-04	0900-1230	CURE	Dry Gulch Campground to East Elk Picnic Area	GH	Foot					3						
2-Jun-04	1320-1415	CURE	East Elk Creek pond	GH	Foot											
2-Jun-04	1430-1620	CURE	Cooper Ranch and south	GH	Foot		2									2
3-Jun-04	0915-1245	CURE	Dillon Pinnacles	GH, SF	Foot					1						
3-Jun-04	1500-1715	CURE	Crystal Creek Trail	GH	Foot											1
4-Jun-04	1000-1400	CURE	Curecanti Creek Trail	GH, SF	Foot					3						
4-Jun-04	1645-1815	CURE	Neversink Trail	GH, SF	Foot		3									
5-Jun-04	1030-1245	CURE	Ponderosa Campground vicinity, Soap Creek Arm	GH, SF	Foot											
5-Jun-04	1340-1530	CURE	Pine Creek Trail	GH, SF	Foot											
5-Jun-04	1600-1630	CURE	Red Creek	GH	Foot											1
5-Jun-04	1645-1730	CURE	West of Beaver Creek	GH	Foot					3						
11-Jun-04	0830-2000	BLCA	Oak Flat Trail	GH	Foot											
12-Jun-04	0900-1800	BLCA	Red Rocks area	GH	Foot			2		4	1	4				
13-Jun-04	0930-1730	BLCA	East of Chukar Trail, south of Gunnison River	GH	Foot			1		8	1	3				
14-Jun-04	1000-1240	BLCA	Warner Point Trail	GH	Foot				1	6						
14-Jun-04	1250-1440	BLCA	Dragon Point to Cedar Point	GH	Foot					2						
14-Jun-04	1500-1630	BLCA	East Portal	GH	Foot					2						
16-Jun-04	0830-1200	CURE	Beaver Creek area	GH	Foot					4						1
16-Jun-04	1315-1515	CURE	Gateview, Lake Fork	GH	Foot											
17-Jun-04	1000-1700	BLCA	North Vista Trail, Exclamation Point, Green Mountain	GH	Foot				10	6	3					
17-Jun-04	1700-1800	BLCA	North Rim drive to Kneeling Camel	GH	Vehicle											
18-Jun-04	0900-1700	BLCA	Deadhorse Overlook Trail (periodic rain)	GH	Foot	20+				2			1			
18-Jun-04	1800-1830	BLCA	Grizzly Gulch	GH	Foot											
19-Jun-04	0900-1400	BLCA	Chukar Trail, Gunnison River upstream	GH	Foot					7	1	5				2
19-Jun-04	1700-1900	CURE	Mesa Creek Trail	GH	Foot					4			1			
20-Jun-04	0900-1440	CURE	Hermits Rest Trail	GH	Foot				9							
20-Jun-04	1600-1800	BLCA	Deadhorse Overlook Trail	GH	Foot	2+										
21-Jun-04	0900-1530	BLCA	Deadhorse Overlook Trail (periodic rain)	GH	Foot	20+										
6-Aug-04	0815-1420	CURE	Dillon Pinnacles and above	GH	Foot											
6-Aug-04	1530-1710	CURE	Neversink Trail	GH	Foot											1
6-Aug-04	1715-1740	CURE	Cooper Ranch Trail and north	GH	Foot											
6-Aug-04	1755-1845	CURE	Steuben Creek above U.S. Hwy 50	GH	Foot											
7-Aug-04	0830-1115	CURE	Pine Creek Trail	GH	Foot											3
7-Aug-04	1230-1600	CURE	Curecanti Creek Trail	GH	Foot											
7-Aug-04	1650-1850	CURE	Mesa Creek Trail	GH	Foot				1	8						
7-Aug-04	1935-2035	BLCA	Warner Point Trail	GH	Foot					1						
7-Aug-04	1935-2100	BLCA	Rim Drive	GH	Vehicle											
8-Aug-04	0755-1300	BLCA	Chukar Trail, Gunnison River upstream	GH	Foot					13				1*		1

Date	Time (MDT)	NPS Unit	Location	Observers (GH: G. Hammerson, SF: S. Frimel)	Type of Survey	Tiger salamander	Western chorus frog	Collared lizard	Sagebrush lizard	Plateau lizard	Tree lizard	Striped plateau lizard	Smooth green snake	Striped whipsnake	Gopher snake	Terrestrial gartersnake
8-Aug-04	1730-1850	BLCA	East Portal	GH	Foot					1						
8-Aug-04	1915-1955	BLCA	Rock Point Trail	GH	Foot					2						
9-Aug-04	0900-1115	BLCA	Warner Point Trail	GH	Foot				1	4	1					
9-Aug-04	1200-1400	BLCA	East Portal	GH	Foot					1						1
9-Aug-04	1455-1600	BLCA	Warner Point Trail	GH	Foot											
9-Aug-04	1630-1740	BLCA	Devils Lookout Trail	GH	Foot					4	3		1			
10-Aug-04	0930-1730	BLCA	Exclamation Point, Serpent Point	GH	Foot				2	7	3					
10-Aug-04	1730-1820	BLCA	Rim Drive	GH	Vehicle											
10-Aug-04	1820-1905	BLCA	Chasm View Trail, North Rim	GH	Foot					3						
11-Aug-04	0900-1350	BLCA	Chukar Trail, Gunnison River upstream	GH	Foot					13	1	2			1	
11-Aug-04	1640-1815	BLCA	Warner Point Trail and upper Warner Route to saddle	GH	Foot				1							
12-Aug-04	1040-1255	BLCA	Warner Point Trail and Warner Route to Gunnison River	GH	Foot											
12-Aug-04	1500-2020	BLCA	Gunnison River, bottom of Warner Route	GH	Foot					3	4					
13-Aug-04	0700-1105	BLCA	Gunnison River to Warner Point Trailhead	GH	Foot					1	1					
13-Aug-04	1145-1215	BLCA	Rim Drive	GH	Vehicle				1							
* This snake was near the Gunnison River, just west of the park boundary.																

Appendix 4. Photo vouchers of species found in BLCA and CURE in 2004. Western chorus frog (*Pseudacris triseriata*) was detected in CURE but not photographed.



Figure 1 Tiger salamander (*Ambystoma tigrinum*) larva, BLCA, 21 June 2004



Figure 2 Tiger salamander (*Ambystoma tigrinum*) larvae, BLCA, 20 June 2004



Figure 3 Eastern collared lizard (*Crotaphytus collaris*), BLCA, 13 June 2004



Figure 4 Sagebrush lizard (*Sceloporus graciosus*), CURE, 20 June 2004



Figure 5 Sagebrush lizard (*Sceloporus graciosus*), BLCA, 14 June 2004



Figure 6 Plateau lizard (*Sceloporus tristichus*), CURE, 3 June 2004



Figure 7 Plateau lizard (*Sceloporus tristichus*), BLCA, 18 June 2004



Figure 8 Plateau lizards (*Sceloporus tristichus*), BLCA, 19 June 2004



Figure 9 Tree lizard (*Urosaurus ornatus*), BLCA, 17 June 2004



Figure 10 Tree lizard (*Urosaurus ornatus*), BLCA, 19 June 2004



Figure 11 Plateau striped whiptail (*Aspidoscelis velox*), BLCA, 12 June 2004

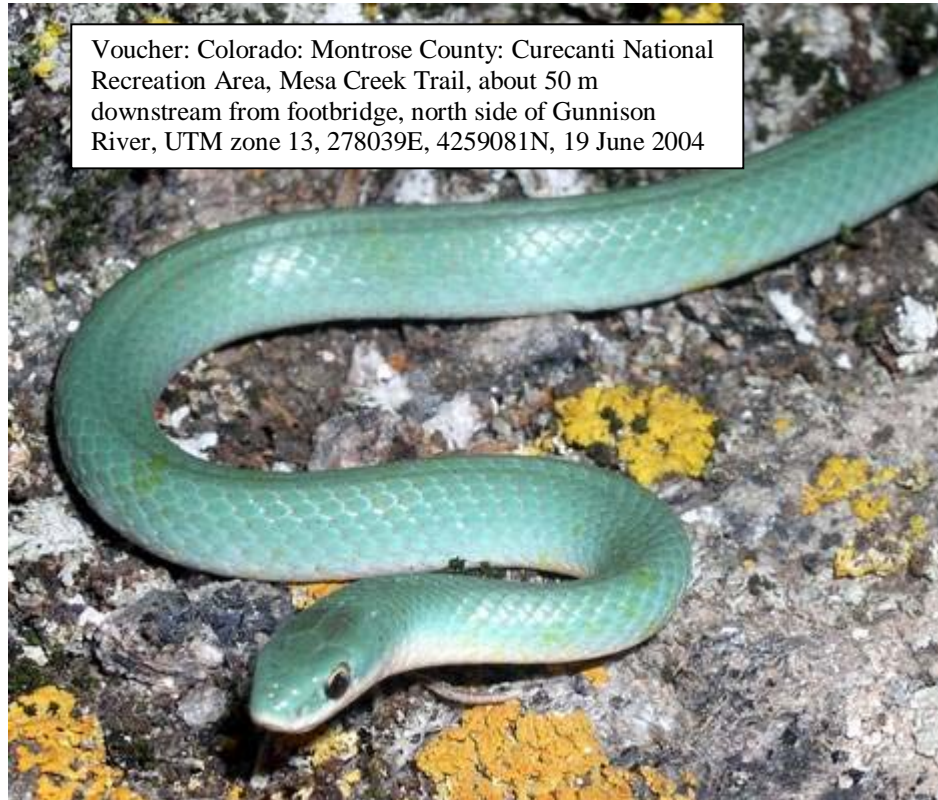


Figure 12 Smooth green snake (*Opheodrys vernalis*), CURE, 19 June 2004

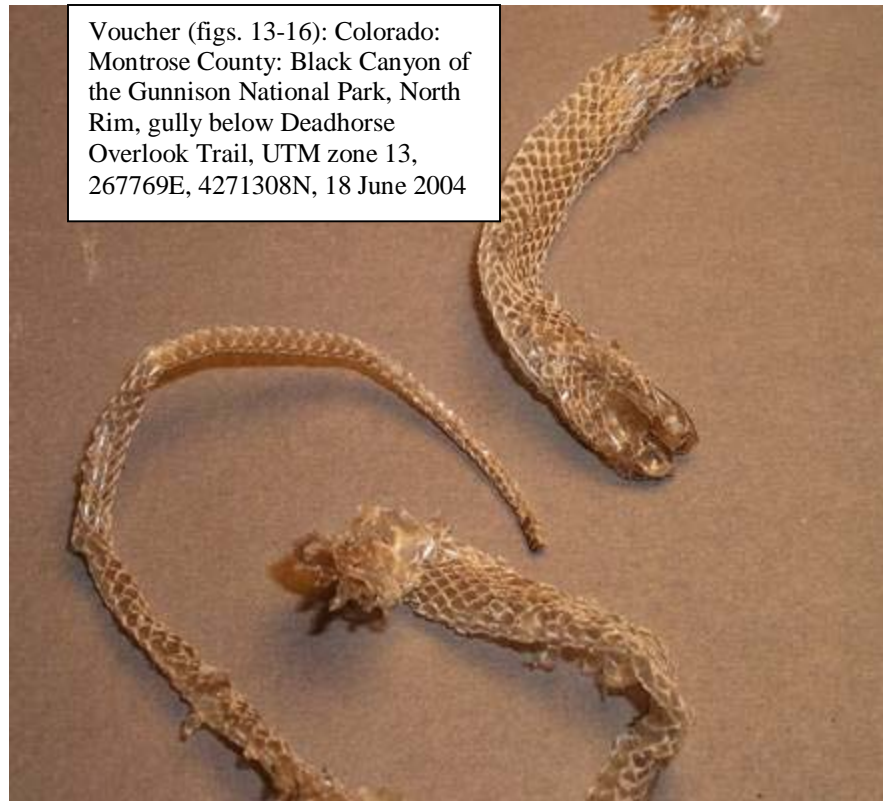


Figure 13 Smooth green snake (*Opheodrys vernalis*) (skin found under rock), BLCA, 18 June 2004



Figure 14 Smooth green snake (*Opheodrys vernalis*), BLCA, 18 June 2004



Figure 15 Smooth green snake (*Opheodrys vernalis*), BLCA, 18 June 2004



Figure 16 Smooth greensnake (*Opheodrys vernalis*), BLCA, 18 June 2004



Figure 17 Striped whipsnake (*Masticophis taeniatus*), bottom of Chukar Trail, near BLCA, 8 August 2004

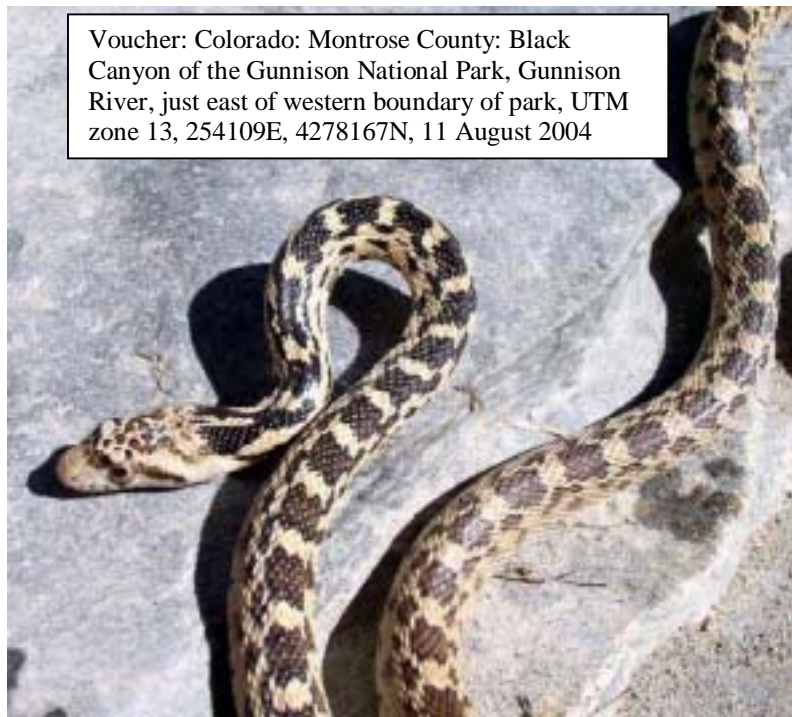


Figure 18 Gophersnake (*Pituophis catenifer*), BLCA, 11 August 2004



Figure 19 Terrestrial gartersnake (*Thamnophis elegans*), CURE, 3 June 2004



Figure 20 Terrestrial gartersnake (*Thamnophis elegans*), atypical color morph, BLCA, 19 June 2004